Technical Assistance Services for Communities
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TD No.: R9 #10 Aerojet General Corp Superfund Site

Technical Assistance Needs Assessment

Site Name: Aerojet General Corp. Superfund Site
Site Location: Sacramento, California
Date: January 15, 2014

The U.S. Environmental Protection Agency's (EPA's) Technical Assistance Services for Communities Program (TASC) conducted this Technical Assistance Needs Assessment for the citizens of Rancho Cordova and Folsom, California. The purpose of this assessment is to better understand the technical assistance needs of the community related to the Aerojet General Corp. Superfund site and provide recommendations for meeting those needs. This assessment complements efforts to conduct comprehensive cleanup of the site.

The recommendations contained in this summary are based on:

- Background site and community information gathered online.[1]

- Attendance at Aerojet Community Advisory Group (CAG) meetings on July 17, September 18 and November 20, 2013, and discussions with 30 meeting attendees:
  - Alex MacDonald
  - Allen Tsao
  - Alta Tura
  - Brit Snipes
  - Bruce Cline
  - Burt Hodges
  - Christopher Fennessy
  - Cindy Chain-Britton
  - Dan Waligora
  - David Miller
  - Don Nottoli
  - Gary Riley
  - George Waegell
  - Jackie Lane
  - Janis Heple
  - Jimmy Spearow
  - Kathy Lawson
  - Kevin Mayer
  - Larry Ladd
  - Nathan Schumacker
  - Pete MacNicholl
  - Rick Bettis
  - Rodney Fricke
  - Stephen Green
  - Steve Nugent
  - Steven Ross
  - Tessa McRae
  - Tim Murphy
  - Tom Lae
  - Tricia Stevens

- Individual telephone discussions with community members and agency representatives in October and November 2013:[2]
  - Alex MacDonald, California Regional Water Quality Control Board
  - Allen Tsao, Aerojet CAG Member

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[1] The end of this document provides a list of information sources.

[2] TASC staff attempted to have one-on-one conversations with other community members who indicated interest at the CAG meetings or were recommended by other community members. TASC's goal was to make sure the community's diverse perspectives were included in the process. TASC did not receive responses back from all inquiries.

- Alta Tura, Aerojet CAG Member
- Burt Hodges, Aerojet CAG Member
- Darrell Eck, Executive Director, Sacramento Central Groundwater Authority/Senior Civil Engineer, Sacramento County Water Agency
- David Miller, Community Development Director, City of Folsom
- Janis Heple, Aerojet CAG Chair
- Jimmy Spearow, Ph. D., Aerojet CAG Member
- Kathy Lawson, Quality Engineer, Golden State Water District
- Larry Ladd, Aerojet CAG Member
- Paul Schubert, Northern District Manager, Golden State Water District
- Rick Bettis, Aerojet CAG Member
- Rob Burness, Board Member, Environmental Council of Sacramento
- Rob Roscoe, General Manager, Sacramento Suburban Water District
- Rob Swartz, Principal Project Manager, Sacramento Groundwater Authority
- Steven Ross, California Department of Toxic Substance Control
- Tom Gray, General Manager, Fair Oaks Water District
- Steve Nugent, General Manager, Carmichael Water District

- Telephone discussions with Aerojet Rocketdyne representatives: Tim Murphy, Director of Corporate Responsibility and Christopher Fennessy, Engineering Manager.

- Telephone discussions with EPA Region 9 Remedial Project Managers Gary Riley and Kevin Mayer and Jackie Lane, Community Involvement Coordinator.

Site Background

The 5,900-acre Aerojet General Corp. Superfund site is located 15 miles east of Sacramento, near Rancho Cordova, California. Initial operations at the Aerojet facility began in 1953 on land previously used for gold mining. Gold mining resulted in 40 to 100 foot deep dredge tailings underlying the site. Since that time, the facility has manufactured liquid rocket engines and solid rocket motors for military and commercial uses, in addition to rocket propellant agents, agricultural, pharmaceutical and other industrial chemicals. Aerojet and its subsidiaries are known to have disposed of waste materials, more recently determined to be hazardous, in surface impoundments, landfills, deep injection wells, leachate fields and by open burning.

Volatile organic compounds (VOCs) were first detected off site in private water wells in 1979 and in the American River, which borders the northeastern edge of the site, in 1983.The following VOCs have been detected in the ground water that has moved off site: trichloroethene (TCE), perchloroethylene (PCE), 1,1-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroethene, 1,2-Dichloroethane, 1,1,2-Trichloroethane, Carbon Tetrachloride, Vinyl Chloride, Chloroform, and Freon-113 and other components used during the manufacturing and testing of rocket propulsion systems, such as perchlorate and N-Nitrosodimethylamine (NDMA). Perchlorate, which is used in solid rocket fuel, was found in drinking water wells off site in January 1997. Soils at the site contain VOCs, perchlorate and metals including arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, nickel and zinc above agency screening levels.

The Aerojet site was listed on EPA's National Priorities List in 1983. Between 1983 and 1987, prior to selecting a long-term cleanup remedy, five extraction wells and treatment facilities were installed as a barrier system to prevent further off-site movement of VOC contaminated ground water. The 1989 Partial Consent Decree for Remedial Investigation and Feasibility Study (RI/FS) was modified on April 15, 2002, to allow the site to be divided into Operable Units (OUs). Since that time, Records of Decisions for OU-3 and OU-5 have been completed. The public comment period for the OU-6 Proposed Plan ended on September 20, 2013. Reporting of the Remedial Investigation for OU-7 is currently underway.

History of Community Involvement

Community concern about the site began in 1979, when contamination was discovered in ground water. Community members reached out to the Regional Water Quality Control Board (RWQCB) out of concern over perchlorates and other VOC contaminants in the river and a dialogue over contamination from the site began. Community interest surrounding the Aerojet site grew into the early 1980s and again in the mid-1990s as knowledge of perchlorate contamination became more widespread. Through a collaborative effort between regulators, Aerojet Corporation (Aerojet) and concerned community members, the EPA Aerojet CAG was formed in 2001. Since its formation, the CAG has met regularly with EPA, Aerojet, the California Division of Toxic Substances Control (DTSC), the RWQCB and others to discuss issues related to the site and comment on cleanup plans. Site information and assistance has been provided to the CAG primarily by the EPA site team, Aerojet, DTSC, and RWQCB since 2001.

In 2013 and leading up to the release of the OU-6 Proposed Plan, the CAG began to focus on development plans for the Aerojet lands and concern over the potential effects of contamination on future residents. While development plans were publicly disclosed during the update of the Partial Consent Decree in the early 2000s, and during Sacramento County's entitlement process for Glenborough and Easton Place in the early 2010s, the CAG remains interested in comparing cleanup plans with development plans. This led to a desire from the CAG to be more technically involved in the remedial process, specifically in the RI/FS phase. This interest also applies to OU-7, whose Proposed Plan is the next to be released to the public.

Community Stakeholder Areas of Interest Related to the Site

Stakeholders represented in this needs assessment include CAG members, members of the greater environmental community, water purveyors, state agency representatives, city and county representatives, Aerojet representatives and EPA site team members.

The overarching interest of those interviewed for this needs assessment is that the Aerojet site cleanup be conducted in a manner that is most protective of human and ecological health. This overarching interest also extends to protection of future occupants in areas of the site which are planned for extensive residential and commercial development. CAG

members interviewed expressed the need for independent education and outreach related to the site, delivered in a way that all CAG and community members can understand. The subsections below summarize specific areas of interest related to this overarching theme.

Understanding the Cleanup Process

Most community members interviewed cited the need for better understanding of the Superfund remedial process, as well as specific cleanup details for each OU. Given the complexities of the Aerojet site and the volume of information in the RI/FS for each operable unit, greater understanding is needed in order for stakeholders to make meaningful comments on Proposed Plans. This includes:

- Receiving information in plain language for better understanding by the general public.
- A basic timeline for each operable unit, with a schedule of documents for review, including those that regulators are reviewing between CAG meetings.
- Specific information on the data gathered and analyzed during the RI/FS.
- More information on screening levels used in the human health and ecological risk assessments.
- More information on how screening levels are used to determine areas not retained for remedial action.
- Assurance for the CAG, from EPA, Aerojet and state regulators that the site cleanup will be maintained into the future, especially in light of the centuries-long cleanup process.

Understanding Contamination as it Relates to Land Development

The majority of community members interviewed expressed interest in issues surrounding the future land development of the Aerojet General Corporation site, particularly regarding ground water and soil contamination. Interest in complete cleanup prior to development, as well as concern over land use restrictions were highlighted as well. Specific ground water and soil contamination areas of interest are highlighted below.

Ground water Contamination

Issues of interest regarding ground water contamination included:

- Changes in the contaminant plumes over time, including the impacts of plumes spreading as ground water levels rise or fall.
- Additional potential chemicals of concern (COCs) listed by EPA that may be present in ground water but have not been identified and addressed in the current cleanup.
- The potential human health and ecological effects of contaminated ground water reaching the American River.
- The lack of specific information from EPA, given on a regular basis, about ground water contamination issues that could affect water supply wells operated by local water purveyors.
- The lack of involvement by EPA in regional water planning activity, including local water purveyors and ground water authorities.

Soil Contamination

The majority of CAG members interviewed expressed concern over the following soil contamination issues:

- Vapor intrusion into areas designated for future mixed use or residential development.
- Vapor mitigation measures and institutional controls to eliminate vapor intrusion risk.
- Roles and responsibilities of regulators and landowners for maintaining vapor mitigation systems.
- Potential future restrictions on residential land use.
- Additional COCs, particularly nitrosamines, which have not been targeted for cleanup in past OUs.
- Lack of involvement by those in the city and county planning departments prior to the OU-6 Proposed Plan.

Enhancing Community Outreach and Education

Many stakeholders interviewed expressed interest in reaching a larger segment of the community, both immediately surrounding the site and in areas where future development may occur. Interest included the following:

- Reaching a broader audience with information about the site.
- Building more internal capacity within the CAG, as well as recruiting new members.
- Concern that without additional outreach and new members there may not be adequate interest to maintain the CAG well enough into the future.

Recommendations for Technical Assistance

This section provides recommendations on meeting technical assistance needs.

1. Provide the CAG and general community with a better understanding of the overall remedial process and specific cleanup details for each operable unit at the site: [3]
   a. Develop handouts and engage in discussions with the CAG about a schedule of deliverables and status for each OU and information on specific data collected during the RI/FS phase.
   b. Host a technical meeting with risk assessors and community members to discuss risk assessments, including screening used, before the RI is finalized. Explain technical comments in plain language to the community during such a meeting.

2. Provide the community with more information on ground water contamination and its potential impact on development. EPA, DTSC and Aerojet could consider the following[4]:

[3] Independent technical assistance could be obtained through EPA's Technical Assistance Grants (TAG) or TASC programs.

a. Provide additional map layers for known COCs that are being tracked and where they could impact land slated for development and discuss with the CAG.
b. Engage in a conversation with CAG members on further investigation into additional COCs, in addition to N-Nitrosodimethylamine (NDMA), Trichloroethylene (TCE) and perchlorate, and their potential affects on future residents on developed areas.
c. Facilitate a quarterly or bi-annual meeting with local water purveyors, through local ground water management authorities, to discuss in greater detail the latest information on ground water plumes that may affect water supply well function and the actions of ground water authorities.
d. Provide additional outreach to regional and local water purveyors for greater participation in planning activities.

3. Provide more information to the CAG and interested stakeholders on soil contamination and related issues of vapor intrusion in areas slated for development.. EPA, Aerojet and DTSC could consider the following[5]:
   a. Provide additional information on specific vapor mitigation plans for OU-6 and future OUs, including a process that clearly lays out roles and responsibilities for all present and future parties.
   b. Engage in a conversation with the CAG on nitrosamine and other COCs in the OU-7 RI/FS and how the presence and possible cleanup of these COCs could affect areas slated for development.
   c. Provide outreach to city and county planning offices regarding the cleanup of lands slated for development and issues regarding vapor intrusion and mitigation.

4. Provide technical support to assist in greater outreach and education to community members that surround the site. EPA could consider the following[6]:
   a. With the CAG's assistance, create materials or presentations that could be distributed throughout out the community, or to be presented to other stakeholders, that explain site information and how to get involved.
   b. Work with the CAG to create and implement an outreach plan to effectively increase membership.

Prioritizing CAG Interests

Technical assistance recommendations in this assessment were created based on the needs expressed by the stakeholders. In order to most effectively address the needs expressed, especially given the complexity of the Aerojet site and available resources, the CAG and the community should consider creating a clear list of priorities for technical assistance.

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[4] Independent technical assistance could be obtained through EPA's Technical Assistance Grants (TAG) or TASC programs.

[5] Independent technical assistance could be obtained through EPA's Technical Assistance Grants (TAG) or TASC programs.

[6] Independent technical assistance could be obtained through EPA's Technical Assistance Grants (TAG) or TASC programs.

Sources Consulted for Background Information on the Site and the Community

EPA Site Overview for Aerojet General Corp Site. Available at:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/CAD980358832

Technical documents accessed from this website include:

Record of Decision for the Western Groundwater Operable Unit OU-3. Available at:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/fcc6df948bea3d488825784f0005f41b!OpenDocument

Perimeter Groundwater Operable Unit 5 - Record of Decision. Available at:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/0d2344bf40b1e2218825783f0066f88e!OpenDocument

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